

SOME UNDESCRIBED AGGRESSIVE BEHAVIOURS, DISPLAYS AND CALLS OF THE HOODED PLOVER IN WESTERN AUSTRALIA

By MICHAEL A. WESTON

Department of Zoology, University of Melbourne, Parkville, Vic. 3052.

SUMMARY

Virtually nothing is published on the behaviour of Hooded Plovers on the salt-lakes of Western Australia. Observations indicate aggression was common, at least in large flocks. This note describes and names five previously undescribed displays, and two undescribed calls from Lake Gore in south-western Australia. Notes on other displays and calls are also provided. All but one display has also been recorded from an intensive study of Victorian populations.

INTRODUCTION

Some aspects of the behaviour of the Hooded Plover *Thinornis rubricollis* are reasonably well known, but are based almost exclusively on populations in eastern Australia. Bransbury (1991) provides the best primary source for the descriptions of displays and other behaviours, based on observations of birds in South Australia, and Marchant and Higgins (1993) summarise all available information on behaviour, but there is virtually none available from Western Australia. However, there is one recent description of interspecific aggression (Bailey and Blyth 1996). Flocks of Hooded Plovers occur in eastern Australia, but the size of these flocks very rarely reach 100

birds, and are typically less than 25 (unpubl. data). In Western Australia, some very large flocks occur, with the maximum size recorded being 1555 adults, and behaviour in large flocks is poorly described. Vocalisations are also poorly known throughout the range (Marchant and Higgins 1993; Newbey 1996; unpubl. data).

In 1995 I had the opportunity to make observations on large flocks of Hooded Plovers at a salt-lake in Western Australia. I found the birds to be rather noisy (cf. Frith 1986) and aggressive, and was able to describe new displays, behaviours and vocalisations. Most were associated with aggression, which was common. This paper presents those observations.

STUDY AREA AND METHODS

All observations were made at Lake Gore, a large salt-lake 37 km WNW of Esperance, in southern Western Australia (33°46'S, 121°32'E). Observations were made between 11 February and 25 February 1995. The population under consideration varied from 10 to 950 birds (18 counts), and numbers varied in a complex way, both between days and according to time of day. Nevertheless, the population using the lake was large, and the counts averaged 384.2 birds. Only three of the counts were less than 100 birds (17% of counts), and only one was less than 50 birds (6% of counts). During the study I also captured and banded 100 birds. Some moult data, and other factors (e.g. the absence of territorial pairs), suggested that breeding had ceased. The population was therefore considered to be a large, post-breeding flock.

All observations were made with binoculars or a tripod-mounted Tasco telescope, and were immediately written down. Some sound recordings were made, but most calls associated with displays were not successfully recorded, so sonagrams are not presented. All displays and calls described here were noted on many occasions during the study period. Behaviours that occur in a number of contexts (e.g. head-bobbing) are not dealt with here. Other behaviour, including comfort and foraging behaviour, as well as behaviour associated with breeding, will be presented elsewhere.

On 23 February, seven counts were made of the north-eastern section of Lake Gore, where almost all Hooded Plovers occurred. These counts were made at two-hourly intervals, and each count took about an hour. During the counts, all birds were classified according to their activity (foraging/roosting/preening/washing/aggression). Therefore, these counts provide some data on the time budgeting of the birds.

All comments that attribute a status to a bird (e.g. paired/unpaired, parent/non-parent) are based on many observations of colour-banded birds in Victoria.

RESULTS

Aggressive interactions were common in the flocks I observed. In the time budgeting counts made on 23 February, an average of 2% of observations related to adult aggression; this can be interpreted as birds spending about 2% of their time engaged in aggressive behaviour, but, further data will be required to assess the overall time devoted to aggressive behaviour. Aggression was recorded during foraging and roosting, and occurred in all parts of the habitat.

This paper:

Describes previously undescribed aggressive behaviour (Jumping; Charging).

Clarifies previously described displays (Bowing; Lateral Wing and Tail Display).

Reports and names previously undescribed displays (Piping Display; Flight Display;

Submissive Sit; Aggressive Flight Display; Crazy Bird Display).

Expands the understanding of the context of a previously described call (Barking).

Reports previously undescribed calls (Buzz; Aggressive Piping Call).

Only one display described herein (*Submissive Sit*) and one behaviour (*Jumping*) have not been recorded being performed by Hooded Plovers in Victoria. This might be because of much lower densities of plovers in Victoria: peak density at Lake Gore was about 380 birds/km of shoreline (this study) compared with 0.4 birds/km of Victorian coast in the non-breeding season in Victoria (after Heislars and Weston 1993). The calls described here have been recorded from both Victoria and Western Australia.

Descriptions of Behaviour and Displays

Jumping

Aggression in tight flocks involved *Jumping*, where, typically, two opponents would jump up at each other. The birds did not flap their wings when *Jumping*, though sometimes opened them slightly. *Jumping* birds faced one another or stood facing the same direction. On one occasion, six birds were noted *Jumping* up in one area of a flock. Actual contact was not observed. *Jumping* often occurred before and during other aggressive behaviour, such as *Bowing* and the *Aggressive Piping Display*. On a very windy day (23 Feb.) some birds jumped as high as one metre above the substrate. This

behaviour has not been previously described (see Marchant and Higgins 1993).

Charging

Birds ran rapidly at one another in the flocks, which almost always resulted in the retreat of the bird being charged. On one occasion an adult charged another, but the subject of the aggression also charged at the initial aggressor by flying and running at the initial aggressor while it ran off. Adults were recorded *Charging* and chasing juveniles. This has also been recorded in Victoria, where juveniles have also been seen *Charging* and chasing adults and other juveniles (pers. obs.).

Charging sometimes leads to both birds taking flight, and the chase continued in flight. These 'Chase Flights' clearly involved one bird following another, and observers should take care to separate such flights from two birds (often paired birds) flying together.

At Lake Gore, adults were also noted flying at other Hooded Plovers on the salt-flat. In one such instance, the flying Plover landed and immediately began a *Piping Display* (see below). One adult was seen making a slow charge at a perched Welcome Swallow *Hirundo neoxena* which flew away. On another occasion, a Red-capped Plover *Charadrius ruficapillus* head-butted a foraging Hooded Plover which jumped aside and charged its antagonist.

Bowing

Bowing was one of the most common aggressive behaviours

observed. When *Bowing* a bird holds its head lower than its back, with the bill pointing downward. One bird was seen to droop its wing tips while *Bowing*. It is similar to the Greeting display of an incubating bird shown in Marchant and Higgins (1993), except that at Lake Gore, the birds were standing and the interactions were aggressive in nature. While *Bowing*, adults were seen to jump sideways at other birds, which sometimes also Bowed before retreating. Birds that were faced with a *Bowing* bird often adopted the *Submissive Sit* behaviour (see below).

It is possible that the *Bowing* behaviour given by an incubating bird at the approach of its partner (which has been termed "Greeting") is in fact an aggressive display given at the approach of another Hooded Plover. In Victoria, I have witnessed conflicts between two paired birds (partners) both trying to incubate.

Lateral Tail and Wing Display

This display was typically seen in confrontations between two Hooded Plovers. Although it is often seen between two flock birds, on rare occasions other members of the flock become involved. In Victoria, I have seen up to four birds displaying at one another.

This is probably the same as the Horizontal Threat Display described by Bransbury (1991). However, the postures involved are not adequately described. The head is held low, and the wing on the side of the opponent is drooped down slightly, though

sometimes the wing tip touches the ground. At the same time, the tail is twisted so that the upper surface of the tail faces the opponent. This is alluded to in the illustrations in Bransbury (1991) but is not mentioned in the text. Sometimes the head is bowed slightly during the display.

Like the descriptions of the Horizontal Threat Display, this display is performed while standing, walking or running, and when the opponent is side on. In Victoria, it is commonly used during interspecific aggression (e.g. aggression directed at Magpies *Gymnorhina tibicen*). At Lake Gore this display often resulted in a *Charge* and then chase from the opponent. Birds using this display also side-stepped toward the opponent. On one occasion, a foraging bird head-butted another, which jumped aside and adopted a *Lateral Tail Display*. On another occasion, a bird approached a roosting bird and gave the *Lateral Tail Display*, causing the roosting bird to move away. This display was seen during both fine weather, and also during heavy rain.

Piping Display

This undescribed display is uncommon, but has been recorded from Lake Gore, and from beaches and near-coastal wetlands in Victoria. Piping individuals always stand, and adopt an upright posture, but hold the head low with the bill pointing down (almost vertically). Piping birds therefore appear hunched. This display is named on the basis of the very similar

display in Pied Oystercatchers *Haematopus longirostris*, except that the Hooded Plover posture is erect whereas the Oystercatcher posture is almost horizontal (see Marchant and Higgins 1993). Hooded Plovers usually give this display while stationary, while Pied Oystercatcher's typically pipe while walking or running.

At Lake Gore, single birds were seen Piping to other adults which simply retreated; though up to six adults Piped at any one time. In Victoria, *Piping Displays* have involved from two to four birds, and they often cause other nearby birds to run toward the displaying birds. The Piping birds often face one another, stand side by side, or when three or four birds are involved, they sometimes stand in a loose circle facing one another.

The display usually degenerates into chasing, *Lateral Tail Displays* or other aggressive behaviour. The *Piping Display* is apparently always associated with a specific call (see below).

In Victoria, this display has been recorded on beaches, in dune blowouts and in near-coastal wetlands. It has been recorded on territories without nests or chicks, on territories with active nests, and also from a pair defending chicks from the incursion of a flock of other Hooded Plovers. The display has also been recorded in non-breeding flocks in Victoria. One member of a pair with an active nests was seen to give this display during a dispute with its partner, but this is the only time I have seen this display used in intra-pair aggression.

Observations of colour-banded

birds in Victoria have shown that pair members typically pipe together as they display to other Hooded Plovers. If one pair member begins Piping, its partner typically runs towards it and joins the *Piping Display*. Juveniles have not been seen to join in a *Piping Display* despite the fact they have often been in flocks where *Piping Displays* have been performed.

Flight Display

Occasionally, single birds were noted engaging in erratic flight, rapidly gaining and losing altitude (about 10–15 m above the substrate or lake water), often changing direction by flicking wings and body from one angle to another.

This behaviour has not been described, but has been often noted in Victoria when banded birds are released after capture. It has also been seen in unbanded adults and juveniles in Victoria. At the times the behaviour was observed in Western Australia, the birds involved had not been banded recently. I also described the flight as "Swallow-like Flight" Its function is unknown.

In Victoria this display has been seen over large breaking surf. Birds have been seen shooting straight up the face of large breaking waves before leveling out about fifteen metres above the wave and continuing the flight. This flight was once recorded from a member of a Victorian pair that had an active nest.

Submissive Sit

This display was seen on a number

of occasions, and it was always given by a bird that was the target of aggression from another bird. The behaviour involved a foraging bird *Bowing* briefly then quickly sitting down, so that its breast was flat on the substrate. The aggressive bird would then stand nearby for a short time or immediately move away. The "dominant" bird would sometimes bob its head. The submissive bird would then stand and continue foraging. Birds typically sat for 10–20 seconds before standing and resuming foraging. This display has not been observed in Victoria, though further observations, particularly of flocks, might reveal its use in the eastern populations as well.

It is easy to confuse this behaviour with the crouching of birds during aggressive encounters. Crouching presumably functions as a hiding mechanism, and always occurs away from aggressive conspecifics. If the crouching bird is approached, it stands and runs away. However, with the *Submissive Sit* behaviour, the displaying bird remains sitting by its antagonist and does not stand until the latter bird moves away.

Aggressive Flight Display

This display was glimpsed on a number of occasions at Lake Gore but has been recorded in detail in Victoria; all details observed in both states correspond. It is often (always?) associated with the *Buzz* call.

The observations of the display that I have made suggest at least three birds are involved, though up to five birds may take part. Pair

members often display together, along with other birds which are often pair members from neighboring territories, but are occasionally non-breeders drifting through the area (all individual identities are based on colour-banding).

This display involves flying birds gliding in parallel with their wings held comparatively high, so that a front-on view would reveal the wings in a "v" configuration. The call is given in flight as the birds lose altitude. As the birds land, they often hold their wings high (as for a double wing stretch, except with the head elevated rather than held down) for several seconds. Aggression using other displays and behaviour continues on the ground.

This display is moderately common early in the breeding season in Victoria (e.g. September), especially when pairs or singles are intruding into other territories. In Victoria it has been recorded on territories without nests or chicks, on territories with nests, and on one territory that contained young chicks (J.M. Peter pers. comm.; Unpubl. Data).

Crazy Bird Display

This undescribed display has been observed in Victoria (on beaches and near-coastal wetlands) and at Lake Gore, and has been performed by adults and juveniles. The impression gained during this display is one of a bird out of control. Its function is unknown, but it is usually, though not always, performed in close proximity to other Hooded Plovers. Thus, I consider that it

serves as some kind of display.

The bird raises its tail, so that the breast moves closer to the substrate (similar to the Exaggerated Scraping Display illustration in Marchant and Higgins 1993). This sometimes involves a number of movements, giving the impression of Tail-bobbing. Sometimes the display goes no further, and so perhaps Tail-bobbing is best considered a separate display. Once the tail is raised, the wings are flapped and flicked while the bird jumps sideways and around, sometimes performing complete circles. The display might be an aggressive display. Alternatively, it might be a displacement activity.

In Victoria, as at Lake Gore, this display has been seen in non-breeding flocks. Additionally it has been given by off-duty birds with active nests.

Descriptions of Calls

Hooded Plovers are rather vocal in eastern Australia and in particular in the large flocks found in Western Australia. Captured birds in both Victoria and Western Australia call frequently while being handled. Here, one previously described call is discussed, and two new calls described.

Barking

This call has been described and a sonogram and a summary are presented in Marchant and Higgins (1993). I found it to be the most common call in the flocks at Lake Gore. Flocks on the salt-flat were constantly giving this call

when foraging, and it was clear that most flock members were calling. When disturbed, the frequency and loudness of the calls seemed to increase, and the calling would reach a crescendo just before a flock was disturbed into flight. This call was also commonly given by flocks on the ground at night.

It has been suggested that this is the main flight note (Hayman *et al.* 1987), and my observations agree with this though at Lake Gore it was far more common amongst feeding flocks. Flying birds were heard giving this call by day and night.

It has been variously described as a loud *ko*, low bark, deep-toned barking *fow* or *kew*, deep *chook* or *quirk quirk* (Marchant and Higgins 1993). I consider the call similar to the bark of the Pied Stilt *Himantopus himantopus*, though softer. A *chuck-chuck-chuck*, a *rulf* and a *raah*, were each heard on one occasion and were probably variants of *Barking*. One juvenile was also heard to "squeak" and this might have been an early development of the common bark call.

In Victoria there is another call that has been noted, and is best described as "croaking" I suspect it is an intense *Barking Call* given under extremely dangerous conditions such as when I was handling young chicks of a pair which remained nearby. It has also been recorded on very hot days when incubating adults are disturbed from their nests and they are attempting to return. Like the *Barking Call* it has a fundamental unit which is

repeated at a rate of as fast as around once per second. This call is reminiscent as the first part of the call of some frogs in Victoria (*Geocrinia* spp.).

Buzz

This call is given during the *Aggressive Flight Display*, and once when a flock was disturbed into flight. It has not been described, but is very similar to the call given by a displaying male Dunlin *Calidris alpina* on the Northern Hemisphere breeding grounds (pers. obs.). It is a descending *Buzz*, apparently given only in flight, and could be described as a long *baa* or *waa*. It was only recorded in the context of aggression, such as on 21 February when two plovers chased a single bird. This call was once heard after dark.

This call is rather rare, and has been recorded during *Aggressive Flight Displays* in Victoria.

Aggressive Piping Call

Here I differentiate this call from the Piping call described in Marchant and Higgins (1993) which they describe as being associated with disturbance or agitation. I suggest that the use of the terms *Alarm Call* (for the latter call) and *Aggressive Piping Call* be invoked. *Alarm Calls* were not heard in Western Australia, and it may be that they are simply a high pitched form of *Barking*, or that they are only associated with breeding.

The *Aggressive Piping Call* is distinctive, and I recorded it as a repeated *raa-raa-raa* or *ha-ha-ha*. The tone becomes higher and the

volume decreases as the call continues. It has been likened to a laugh or cackle.

One bird that gave an *Aggressive Piping Display* started calling before it landed, and upon landing it immediately adopted the *Piping Display* posture. It is rare for a single bird to give this call, rather it is given in chorus by all birds involved in the *Piping Display*. It was heard after dark at Lake Gore, and immediately after heavy rain.

DISCUSSION

In a review of the state of knowledge of the world's wading birds, Piersma *et al.* (1997) considered that the Hooded Plover is reasonably well known, but that it required some more research. Despite the fact that the Hooded Plover is comparatively well known, and that it is classified as Rare (Garnett 1992) and so might attract additional attention, little information is available on such obvious aspects of its natural history as behaviour. Nevertheless, the recent focus of researchers on Hooded Plovers in Western Australia has already contributed to our understanding of Hooded Plovers (see, for example, Singer 1998).

Most aggression in the Hooded Plover is ritualised. This study has resulted in the observation of hundreds of aggressive interactions both in Victoria and Western Australia. Most of the aggression has been between pairs or within flocks, but some intra-pair aggression has been observed and aggression from parents to

their flying young has also been noted (individual identity of birds based on colour-banding). Gentle contact between birds occurs rarely, and at Lake Gore it always occurred between foraging birds; it seemed incidental. Despite these hundreds of observations only once was forceful contact between birds seen. This incident took place in a large dune blowout at Cotters Beach, Wilson's Promontory National Park, Victoria. A member of a flock moved close to a chick which was crouching while its parents were some distance away being aggressive to the flock. One colour-banded parent flew directly at the intruder near the chick, and hit it hard on the back with its feet. The force of the blow knocked the intruder off its feet into the ground, with feathers flying out from it, and causing a loud, hollow thud which was audible from my observation hide over thirty metres away. The intruder jumped to its feet and flew off.

Here I have presented descriptions of some behaviour and calls in the hope that it will assist students of the behavioural ecology of Hooded Plovers. There is no doubt that there are additional displays and calls that remain to be described. Additionally, the function of many of the behaviours still needs to be established (e.g. *Crazy Bird Display*).

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